



Technology Center 2100

wherein each parcel of said plurality of parcels contains a separate subset of said plurality of data entities, and

wherein the subset of said plurality of data entities contained in each parcel represents the geographic features located in a separate one of a plurality of areas into which the geographic region is divided;

wherein an improvement comprises:

for each parcel of said plurality of parcels,

dividing the area associated therewith into a plurality of sub-areas;

and

storing a first index that identifies, for each of the data entities contained in the parcel, each of the sub-areas intersected by the geographic feature represented thereby,

whereby each sub-area in which a geographic feature is located can be determined by using the first index.

24. (Amended) A method of using a geographic database comprising the steps of:

accepting specification of a search area in a geographic region represented by the geographic database;

identifying a parcel of data in the geographic database, wherein the parcel contains data entities that represent geographic features encompassed within a first rectangular area located within the geographic region, wherein the first rectangular area intersects said search area;

wherein an improvement comprises:

using a first index associated with the parcel to identify which of a plurality of rectangular sub-areas into which the first rectangular area is divided intersect the search area; and

using a second index associated with the parcel to identify the data entities contained in the parcel that intersect each of the plurality of rectangular sub-areas identified as intersecting the search area,

16 whereby the data entities that represent the geographic features located within the
17 search area are determined.

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1 25. (Amended) A method of using a geographic database to identify
2 geographic features located within a search area, wherein the geographic database
3 contains data entities that represent geographic features located in a geographic region,
4 and wherein the geographic database is organized into parcels, each of which contains a
5 subset of all the data entities in the geographic database, and wherein the subset of data
6 entities in each parcel represent the geographic features encompassed within a separate
7 respective one of a plurality of rectangular areas into which the geographic region is
8 divided, wherein the method comprises the steps of:

9 (a) identifying each parcel that is associated with a rectangular area that
10 intersects the search area;

11 wherein an improvement comprises:

12 (b) for each parcel identified in step (a), using a first index associated with the
13 parcel to identify each rectangular sub-area formed of the rectangular area associated
14 with the parcel that intersects the search area; and

15 (c) for each parcel identified in step (a), using a second index associated with
16 the parcel to identify each of the data entities contained therein that represents a
17 geographic feature that intersects each of the sub-areas identified in step (b),

18 whereby the data entities identified in step (c) represent geographic features
19 located in the search area.

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1 27. (Amended) A geographic database comprising:

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2 (a) data entities, each of which represents a geographic feature in a
3 geographic region,

4 wherein the data entities are separated into a plurality of parcels,
5 wherein each parcel contains a subset of the data entities,

6 wherein the subset of data entities in each parcel represents those
7 geographic features encompassed within a separate respective one of a plurality of
8 rectangular areas into which the entire geographic region is divided; and

9 wherein an improvement comprises:
10 (b) a plurality of indexes, each of which is associated with a separate
11 respective one of said plurality of parcels, and wherein each index relates each of the data
12 entities in the subset of data entities contained in the parcel associated therewith to at
13 least one rectangular sub-area formed of the rectangular area associated with the parcel
14 associated therewith,
15 wherein said geographic database is stored on a computer readable storage
16 medium.

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1 29. (Amended) A computer usable medium having computer readable data
2 structure means embodied thereon, wherein the computer readable data structure means is
3 used for a database for geographic data comprised of data records that represent segments
4 of roads located in a geographic region, said computer readable data structure
5 comprising:
6 a plurality of parcels, each of which contains a separate portion of the data
7 records, such that each parcel contains the data records that represent the segments of
8 roads located in a separate one of a plurality of areas into which the geographic region is
9 divided;
10 wherein an improvement comprises:
11 a plurality of first indexes, each of which is associated with a respective one of the
12 plurality of parcels, wherein each first index defines a plurality of sub-areas formed of the
13 area associated with the parcel associated therewith; and
14 a plurality of second indexes, each of which is associated with a respective one of
15 the plurality of parcels, wherein each second index associates each of the data records in
16 the parcel associated therewith to at least one of the plurality of sub-areas defined by the
17 first index associated with the parcel,
18 whereby the computer readable data structure means identifies which of the data
19 records represent segments of roads located in any specified sub-area of any specified
20 area.
